fective fowling piece, a portion of the percussion cap had struck him in the eye; that immediately a quantity of fluid had run out, but whether, or not, the fragment had come out also, he could not say. At this time several hours had elapsed since the accident; the eye was intensely inflamed, excessively painful and vomiting had several times occurred. The eye was in no condition for such an examination, as could alone have enabled us to ascertain the presence of the foreign body, if indeed, such an examination would have under any circumstances been allowable. The patient was, therefore, subjected to a most active antiphlogistic treatment. By these means the symptoms abated in a few days, when the patient insisted upon going home, a few miles in the country. The pain and inflammation, however, though lessened, never entirely ceased, and frequently became severe, and a physician in his neighbourhood very properly inferred, that this was owing to the presence of a foreign body, and as the eye was then completely disorganised, he opened it by a section with a cataract knife. The aqueous humour, the lens which was opaque, and vitreous humour were all evacuated. With the last portion of the latter came the fragment of percussion cap. It probably had been in contact with the retina; whence the pain and irritation. The want of perfect certainty, that the fragment was still in the eye and some hopes, if there, it might be buried in the lens, where its presence would be productive of no farther mischief, than causing opacity of this part, deterred us from having recourse to this expedient in the first instance. Had it been then done, it would have saved the patient much pain and suffering, nevertheless we should never have recourse to so severe a measure, except under the most desperate circumstances.

We intended to relate several other cases in order to illustrate some of the other forms of disease of the eye, but are induced to postpone doing so for the present, by the fear of extending this paper beyond proper limits.

ARTICLE II. *Case of Vesico-vaginal Fistula, successfully treated by an Operation.* By GEO. HAYWARD, M. D., one of the surgeons to the Massachusetts General Hospital.

A PRETERNATURAL opening between the bladder and vagina, known by the name of vesico-vaginal fistula, is one of the most distressing accidents to which females are liable. Its most common cause is protracted labour, in which the head of the child has been allowed to press for a great length of time on the bladder, when that organ is distended with urine. Gangrenous inflammation is in this way produced; a slough forms, which separates in a few days after delivery, and through the opening thus made, the urine

is destined to pass, in most of these cases, during the residue of the patient's miserable existence.

Though this is, without doubt, by far the most common cause of vesico-vaginal fistula, it may occasionally be produced in other ways. It may be the result of a careless use of instruments in the delivery of the child; as when the bladder has been torn by a crotchet; or it may arise from an abscess, a stone in the bladder, or a disease of that organ.

Whatever may be the cause of the fistula, the consequence is in the majority of cases of the most afflictive kind, not only because all the urine passes through this new opening, but because the patient has no power of retaining it: she is rendered miserable by the excoriation and soreness that are thus produced, and loathsome to herself by the fetor of the urine. So wretched is the condition of patients of this class, that the language which Dieffenbach applies to them, can hardly be thought to be exaggerated. "Such unhappy beings," he says, "are forced to exclude themselves from society; the very atmosphere surrounding them is polluted by their presence, and even their children shun them; thus rendered miserable, both morally and physically, they yield themselves a prey to apathy; or a pious resignation alone saves them from self destruction."

The degree of suffering, however, is not the same in all cases; the difference arises from the part of the bladder in which the fistulous opening is situated. When it is high up, the patient has some power of retention, but even then the urine escapes through the opening, when any considerable quantity accumulates in the bladder. But if the fistula is lower down, at the place where it is usually found, about an inch to an inch and a half from the opening of the urethra; the retentive power is almost if not altogether lost, the urine flowing off as fast as it is deposited by the ureters.

So great have been the inconvenience and suffering to which patients of this class have been subjected, that the attention of surgeons has long been directed to this formidable trouble, but it is not till within the last twenty years, that any operation for its radical cure has been successfully performed. It is only ten years since, that Mr. Henry Earl remarked, "it must be confessed, that under the most favourable circumstances, these cases present the greatest obstacles, and are certainly the most difficult that occur in surgery." He succeeded, however, in perfectly restoring three such cases; "in one of which," he says, "I performed upwards of thirty operations before success crowned my efforts."

The obstacles to success are numerous and must be apparent. The narrow space in which the operation is to be performed, the disposition of the urine to pass between the lips of the wound, the proximity of the ureters, the great secretion of mucus by the inner coat of the bladder, which is well calculated to interfere with the union of the parts, and the want of readiness with which mucous surfaces take an adhesive inflammation, are all very likely to defeat almost any operation, however well it may be done

Several modes have been devised of operating for the radical cure of the vesico-vaginal fistula. Dupuytren recommended, where the opening was small, the application of the actual cautery; in his hands, it is said to have occasionally succeeded, but with other surgeons it has almost uniformly failed. The objections to it are numerous, and to my mind, decisive. It is not easily applied; it is difficult, and sometimes impossible to limit its action, and if this be not done, the orifice is enlarged instead of being closed, and the trouble of course aggravated.

When there is a laceration only of the bladder, without loss of substance, union, it is said, has sometimes been effected, by keeping a catheter in the bladder, and thus preventing the flow of urine through the wound. But cases of this kind are rarely so favourable, as they usually arise from a sloughing of the organ, followed by a loss of a portion of its parietes. In these cases it has been preferred to use the ligature, the edges of the opening being previously pared. In a few instances this operation has succeeded; in many it has failed, and in some cases it has been productive of inflammation, which terminated in death. For these reasons, as well as because I am not aware that the operation has been ever before successfully done in this country, I shall give the history of the case and the mode of operating at some length.

Case. A married lady, ætat. 34, and of good health, consulted me on account of a vesico-vaginal fistula. Fifteen years ago, she was delivered, by means of instruments of her first child, which was dead, after having been in labour three days, during all of which time she passed no water. About ten days after her delivery an opening formed between the bladder and vagina, and since that period she has lost the retentive power of the bladder, and all the urine has escaped through the opening, except when a catheter has been introduced. Occasionally when in a horizontal posture there would be no escape of urine for two or three hours, though usually there was a continuous flow, but when in an erect position it was constantly dribbling, causing great inconvenience and distress. She had been eleven times pregnant since the accident, but had never gone her full period since the birth of her first child. It is not improbable that the fistula might have had some influence in the production of these repeated abortions.

The only attempts that had been made to relieve her, consisted in the introduction of a catheter, which she wore for a considerable length of time, and touching the edges of the opening with caustic. Neither of these means afforded any relief; of late nothing had been done and she regarded her case as almost hopeless.

Upon examination, I found the fistula situated from an inch and a quarter to an inch and a third behind the urethra, a little on the left side. It was not large, barely sufficient to admit the end of my forefinger, and surrounded by a hardened edge, nearly of the consistence of cartilage. There was

some degree of morbid sensibility in the lining membrane of the vagina, so that an examination was quite painful.

I told her that an operation for the difficulty had been several times successful; that it had more frequently failed, and that in a few instances it had been followed by very serious consequences. At the same time, I regarded her case on the whole as a favourable one, and if, after this explanation, she wished for an operation, I would cheerfully undertake it, She at once consented, and it was fixed for the next day but one, May 10th, 1839, when it was performed in the following manner, in the presence of my friends Drs. Channing, C. G. Putnam and J. B. S. Jackson.

The patient was placed on the edge of a table, in the same position as in the operation for lithotomy. The parts being well dilated, I introduced a large bougie into the urethra and carried it back as far as the fistula. In this way I was able to bring the bladder downwards and forwards, so that the opening was brought fairly into view. The bougie being then taken by an assistant, I made a rapid incision with a scalpel around the fistula about a line from its edges, and then removed the whole circumference of the orifice. As soon as the bleeding, which was slight had ceased, I dissected up the membrane of the vagina from the bladder all around the opening, to the extent of about three lines. This was done partly with the view of increasing the chance of union, by presenting a larger surface, and partly to prevent the necessity of carrying the needles through the bladder. I then introduced a needle, about a third of an inch from the edge of the wound, through the membrane of the vagina and the cellular membrane beneath and brought it out at the opposite side at about an equal distance. Before the needle was drawn through, a second and a third were introduced in the same way, and there being found sufficient to close the orifice, they were carried through, and the threads tightly tied. Each thread was left about three inches in length. I should have remarked, that I found no difficulty in introducing the needles by the hand, the fistulous opening having been brought so low down and so fairly in view.

A short silver catheter constructed for the purpose was then introduced into the bladder, and the patient was conveyed to the bed and laid on her right side, to prevent any urine from coming in contact with the wound. I found her in the evening, eight hours after the operation, quite comfortable. She had had some smarting for two or three hours; but this was soon gone; she complained a little of the catheter; all the water flowed through it and was received upon cloths. She was directed to live on thin arrow root, milk and water and a solution of gum arabic.

In the morning I removed the catheter, lest it might become obstructed, and after cleansing replaced it. No water had escaped through the wound. The patient had slept some in the night; her pain had been slight and all her sufferings she referred to the instrument. Her pulse was good and she

had no febrile symptoms. She was directed to keep in the same position, to live on the same diet and take a solution of salts early the next morning.

She went on perfectly well for five days, the catheter being removed daily. At this time I examined her by means of a speculum. I found that the stitches were quite firm and that the wound had apparently healed in its whole extent. There was no oozing of water through it, though she was then lying on her back and there was urine in the bladder, as it flowed through the catheter as soon as I introduced it. I then cut away the stitches, which I found by no means easy, as I was afraid to bring down the bladder as was done in the operation, lest the wound might be torn open. The stitches however were at length safely removed, and in doing this I was much indebted to the assistance of my friend Dr. Putnam.

A smaller catheter was now introduced, and the patient put to bed in the same position as before. She continued very comfortable for two days, much more so than she had been at any time before, which she attributed to the size of the instrument. I then renewed the catheter altogether and directed her to introduce it every three hours, so as to prevent any accumulation of urine. This she did till the second night, when she slept quietly for seven hours and on waking felt no inconvenience. Twice also during this period she passed water by the efforts of the bladder alone, so that the organ had already regained in part its expulsive power, as well as that of retention. She now set up, introduced the instrument less frequently and was allowed a more generous diet.

At the end of seventeen days from the operation I examined her again; the wound was entirely healed and apparently firm, and the soreness nearly gone. I advised her to introduce the catheter two or three times a day for some weeks; and on the following day she returned home by water, a distance of nearly two hundred miles.

Every thing connected with this case proved more favourable than I had anticipated. The operation was not difficult, nor very painful; it was followed by no bad consequences and afforded complete relief. Perhaps the mode in which the operation was done, may have contributed something to its successful result. No violence was done to the parts by drawing down with hooks the fistulous opening, as in the common mode, nor was the bladder wounded by carrying the needles through it, which I presume is the usual practice. I do not speak with certainty on this point, for I cannot find that any one has given a precise description of the mode in which the operation is to be performed. It may be inferred from the following remark of Dieffenbach, that he carried the needles through the bladder, "It is enough to say," he remarks, "that the operation is always a dangerous one, chiefly on account of the injury done to the bladder; the suture always producing more or less inflammation of the edges of the fistulous opening, or of the surrounding parts." Now it seems to me that in almost every case in which the ligature would be the proper mode of operating, the edges of the

bladder can be brought in contact, without wounding that organ. The chance of adhesion would be much greater, and the danger of inflammation incomparably less. By dissecting up the membrane of the vagina to a considerable extent around the orifice and carrying the needles through this at some distance from the edge of the wound. I cannot doubt that the edges of the bladder, which of course should be previously pared, may in almost every case be brought into close contact.

This of course cannot be done where there is great loss of substance, but in such cases the ligature would not alone be sufficient, and some attempts have recently been made to treat them by the plastic method. "This operation consisted," says Blandin, "in paring the edges of the fistulous orifice, and adapting over it an oval flap derived from the internal surface of the large labia." This operation, according to the British and Foreign Medical Review, has been performed with some success by M. Jobert. In one instance "much inconvenience was experienced from the aftergrowth of hair in the transplanted flap."

I have ventured to make these suggestions, which I do with great diffidence, with regard to the mode of operating, because there is no case in surgery in which a successful operation gives more complete relief than in that of vesico-vaginal fistula, or relieves a greater amount of wretchedness, and because it is by no means well settled what is the best mode of treating this distressing infirmity. The attention of so many enlightened surgeons being now directed to the subject, gives reason to hope that an effectual remedy will be found for this deplorable malady.

Boston, June, 1839.

ARTICLE III. *A Case in which a portion of a Percussion Cap was extracted from the Anterior Chamber of the Eye by an Operation.* Communicated by THOMAS SEWALL, M. D., of Washington, D. C.

THE following case occurred in a son of the Hon. W. C. Rives, of Virginia. At the time of the accident, Mr. Rives, being a member of the United States Senate, was residing in Washington with his family. Alfred, the youngest son, had but recently recovered from the measles, which was at that time epidemic in the city. The disease was severe, but passed off kindly, leaving him only, as is common in that disease, with a very irritable state of the system. He was naturally spare and delicate in his form, but possessed an elasticity and vigour of constitution, physical and intellectual, rarely met with in a youth of his age.

On the 7th of March, 1838, while standing in the street, near his father's residence, a boy who was passing, exploded a copper percussion cap, a